

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
16 June 2005 (16.06.2005)

PCT

(10) International Publication Number
WO 2005/054521 A1

(51) International Patent Classification⁷: **C21B 13/00**

(21) International Application Number:
PCT/US2004/039737

(22) International Filing Date:
26 November 2004 (26.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/525,534 26 November 2003 (26.11.2003) US

(71) Applicant (for all designated States except US):
METAULICS SYSTEMS CO., L.P. [US/US]; 31935
Aurora Road, Solon, OH 44139 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **VILD, Chris, T.**

[US/US]; 2585 Idlewood Road, Cleveland Highs, OH 44118 (US). **VAN LINDEN, Jan, H., L.** [US/US]; 10045 Mifflin Ave., Pittsburgh, PA 15221 (US).

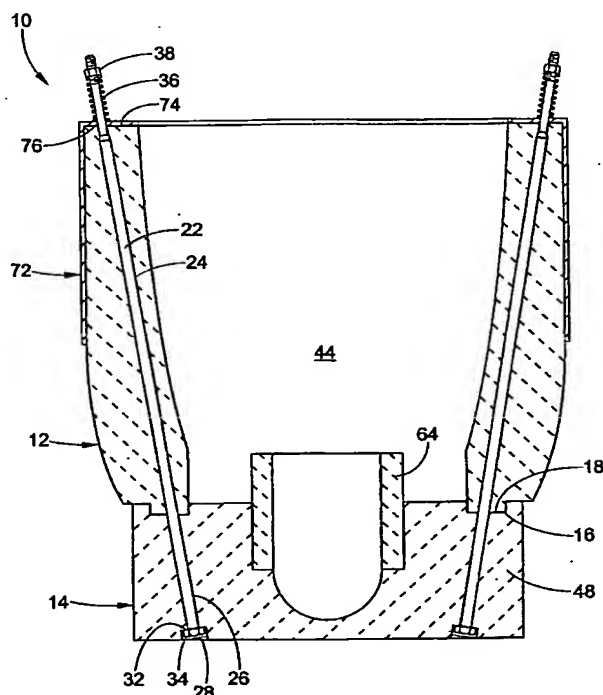
(74) Agent: **MCCOLLISTER, Scott, A.**; Fay, Sharpe, Fagan, Minnich & McKee, LLP, 1100 Superior Ave., Seventh Floor, Cleveland, OH 44114 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: **METAL SCRAP SUBMERGENCE APPARATUS**



(57) Abstract: A material scrap submergence device comprises a body (10) of heat resistant and/or a refractory material that includes a side wall (12) and a base (14) that define a submergence chamber (10). The refractory body (10) can include passages (24) that receive rods (22). The rods (22) can place the refractory body (10) under compression. In another embodiment, the body is confined by a frame (72) attached to the body. The submergence chamber (10) can also be used as a gas injection chamber.



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.